probable, both from analogy and from the fact of the rapid growth, and altered consistency which the tumors assume during pregnancy, that their structure at term is again so closely similar to that of the uterus at the same time, as to explain the reduction of volume and the recession upward which is observed to occur, as being the effect of a muscular contraction and retraction of the fibres, such as is observed in the substance of the uterus.

It is then my belief, and I think that of most obstetricians, at least in this vicinity, that intra-pelvic fibroid tumors should be left to nature; at least, until the advent of marked exhaustion renders immediate delivery necessary in the interests of the mother; when in the probably somewhat rare case of the failure of retraction on the part of the tumor, abdominal section and the performance of Porro's operation would undoubtedly be indicated.

With prolapsed ovarian tumors, upon the other hand, no such result can be expected. The tumor must either be raised above the brim of the pelvis by properly directed taxis, or else the delivery can be effected only by the employment of some cutting operation. Taxis must consist of upward pressure upon the lower surface of the tumor through the vagina and rectum, or through both combined. Its successful performance usually requires the administration of ether, and is greatly helped by the assumption of the knee-chest position, as was apparent in my second case; though it was also evident to all who were present that the maintenance of this position in an etherized woman would necessarily require an amount of assistance which would often be obtained with difficulty in private practice. The advantages of the position are, however, so great, that I should be inclined to make strenuous efforts to obtain it in any future case, no matter how situated.

Taxis should be persistently employed for as long a period as seems possible without undue exhaustion of the patient; and if unsuccessful, should be repeated at intervals, until the appearance of the familiar indications which demand immediate delivery.

If at this time a final effort at taxis should prove unavailing, three courses are open to the attendant; namely, laparotomy for the performance of the Cæsarean section and the removal of the tumor, aspiration of its contents per vagina, and vaginal ovariotomy.

Vaginal ovariotomy, that is, the incision of the posterior vaginal wall, the evacuation of the tumor, its removal through the incision, and the ligature of its pedicle, would probably under these circumstances become a tolerably easy operation. It is, however, rendered inadvisable by the great vascularity of the vaginal wall during parturition, and by the liability of extension of the incision into undesirable localities by laceration during the subsequent delivery; in addition to which we must still deprecate the entrance of lochia into Douglas's fossa, which must necessarily follow, and which would certainly increase the dangers of the case; though in the light of recent experience, it is probable that under aseptic conditions, this danger is much less than is generally supposed, the more especially as the situation of the incision would necessarily insure the best of drainage.

Aspiration of the cyst through the vaginal wall is a measure which, in these days of successful laparotomy, need hardly be considered. It would hardly be likely to result in the complete evacuation of any but a unilocular parovarian cyst, since the multilocular character and viscid contents of a true ovarian cystoma, would almost certainly frustrate the purpose of the operation; and it is attended by very great risks of serious peritonitis.

The Cæsarean operation, when performed before the advent of really serious exhaustion, and in the absence of visceral disease of the mother, has yielded of late years so very high a proportion of successes, that it is probable that it should be unhesitatingly adopted in any case in which taxis fails to remove the obstacle. Its prognosis would in all probability be but little complicated by a simultaneous ovariotomy; but, should the condition of the patient forbid any prolongation of the operation, this could be left for a second laparotomy.

SO-CALLED SPONTANEOUS COMBUSTION.[1]

BY B. H. HARTWELL, M.D., AYER, MASS., *Medical Examiner.*

ON the 12th day of May, 1890, while making a professional call in the outskirts of the town, I was summoned into the adjacent woods by a messenger, who stated that her mother was "burned alive."

Hastily driving to the place indicated (about forty rods distant) a human body was found in the actual state of conflagration. The body was face downward; the face, arms, upper part of the chest and left knee only touching the ground; the rest of the body was raised and held from the ground by the rigidity of the muscles of the parts. It was burning at the shoulder, both sides of the abdomen and both legs. The flames reached from twelve to fifteen inches above the level of the body. The clothing was nearly all consumed. As I reached the spot, the bones of the right leg broke with an audible snap, allowing the foot to hang by the tendons and muscles of one side; those of the other side having burned completely off. Sending my driver for water and assistance, I could only watch the curious and abhorrent spectacle, till a common spading fork was found with which the fire was put out by throwing earth upon it. The flesh was burned from the right shoulder, exposing the joint, from the abdomen, allowing the intestines to protrude, and more or less from both legs. The leg bones were partially calcined. The clothing unburned consisted of parts of a calico dress, cotton vest, woollen skirt and thick, red, woollen undergarment.

The subject of the accident was a woman, forty-nine years of age, about five feet five inches in height, and weighing not far from one hundred and forty pounds; of active habits and nervous temperament. A wife and mother, she was strictly a temperate person, accustomed through life to hard work, one, who in addition to her household duties, went out washing and cleaning, besides doing a good share of the work in a large garden. On the fatal afternoon, she had — as the place showed — been clearing a lot of stumps and roots, and had set fire to a pile of roots from which it had communicated to her clothing, or it had spread into the woodland and had set fire to the clothing during her endeavors to stop it. The body lay about two rods from the burning pile. As proof that the flesh burned of itself, and nothing but the clothing set it afire, it may be stated that the accident occurred

[1] Read before the Massachusetts Medico-Legal Society.

after a rain; that the fire merely skimmed over the surface of the ground, not burning through the leaves; that there was nothing but charred leaves under the body; that her straw hat which lay several feet distant was simply scorched; that the wooden handle of the spade was only blackened.

The above case is interesting in several particulars. It is the first recorded case in which a human body has been found burning (that is, supporting combustion,) by the medical attendant. It differs from nearly all of the recorded cases, in that it occurred in a person in middle life, not very fat, and not addicted to the use of alcohol. It is interesting in a medico-legal sense. It proves that under certain conditions — conditions that exist in the body itself — the human body will burn. We have abundant proof in the many recorded cases of so-called spontaneous combustion (seventy-three are chronicled in medical literature) that the body has been more or less completely destroyed by fire, under circumstances that show that it will support combustion, and this has given rise to the belief in the spontaneous origin of the fire.

Up to the first part of the present century, the belief in spontaneous combustion was almost universal. Dr. Ogston, professor of medical jurisprudence in University of Aberdeen, in an able article in the *British and Foreign Medico-Chirurgical Review*, 1870, says there cannot be the least doubt that the weight of authority is in favor of spontaneous combustion, or at least, increased combustibility.

Of fifty-four writers on the subject, thirty-five have expressed an opinion. Of these, five are skeptical, Drs. Caldwell, Casper and Taylor and Chemists Bischoff and Liebig; three believe in increased combustibility, Dupuytren, Stillé and Guy and twenty-seven (including many illustrious names) believe in spontaneous combustion.

Dr. C. A. Stockwell, in the *Therapeutic Gazette*, March, 1889, page 168, in a lengthy article, carefully reviews many of the reported cases, and while neither admitting, nor denying spontaneous combustion, the paper appears to defend its possibility.

We know how quickly decomposition sets in, in certain cases without apparent cause, in well authenticated cases even before death takes place.

Sir William Gull, in London *Medical Times*, April, 1885, mentions a case of sudden death of a man of intemperate habits. The following day though cool, while there were no signs of ordinary combustion, the body was remarkably distended, and gas from punctures made in the skin burned like carburetted hydrogen. By the actual contact with fire, combustion of the body, more or less complete, might have taken place in this case.

The account of the mysterious death of Mr. Krook in "Bleak House," "call the death by any name your Highness will, attribute it to whom you will, or say it might have been prevented how you will, it is the same death eternally, inborn, inbred, engendered in the corrupted humors of the vicious body itself, and that only spontaneous combustion, and none other of all the deaths that can be died," calls forth this explanation from Mr. Dickens:

"The possibility of what is called spontaneous combustion has been denied since the death of Mr. Krook, and my good friend Mr. Lewes, quite mistaken (as he soon found) in supposing the thing to have been abandoned by all authorities, published some ingenious letters to me at the time when that event was chronicled, arguing that spontaneous combustion could not possibly be. I have no need to observe that, I do not wilfully or negligently mislead my readers. Before I wrote that description, I took pains to investigate the subject. I do not think it necessary to add the recorded opinions and experiences of distinguished medical professors, French, English and Scotch; contenting myself with observing that I shall not abandon the facts until there shall have been a considerable spontaneous combustion of the testimony on which human occurrences are usually received."

"The opinion of Stillé and Wharton on this subject is interesting. Admitting that the phenomena of spontaneous combustion, so-called, are incongruous with the laws of combustion, so far as they are known, it does not follow that we should reject as unworthy of belief, the many curious and authentic facts on record."

"These may be true, although incorrectly accounted for. Indeed, there are many examples of the spontaneous combustion of organic and inorganic matters which chemistry is unable to explain; but the number of cases now known, the uniformity in the description of the phenomena, and of the age and habits of the persons attacked, require us to regard them as scientific facts, yet unexplained."

"We do not hesitate also to affirm that a belief in the actual occurrence of the phenomena referred to (spontaneous combustion) may be entertained without a satisfactory scientific explanation."[2]

It is difficult to understand how the authorities just quoted could have held such opinions at a time when Levoisier and Davy had shown what takes place during, and what conditions are necessary for combustion, and so shortly after the exhaustive report of Liebig and Bischoff, proving the theory of human spontaneous combustion to be false, and making the statement that in the living body it is impossible, it shows that the belief in the spontaneous combustion of the human body is still extant.

It is not easy for us to comprehend how the human body, having seventy-two per cent. of water and only five per cent. of fat, can support combustion, even when in contact with fire, much less when independent of this; yet, from a review of the facts, we are forced to admit it, while denying the spontaneous origin of fire in the human body.

In all of the cases which have been subject to an investigation, proof has been given that the fire caught from burning clothing or other combustible substance; not by the evolution of heat through the chemical action of their own elements, and therefore not spontaneous. Those which have not been investigated have occurred at such a time, and in such a manner as to admit of an easy explanation of the fire from natural causes.

Much stress has been laid on the more or less complete destruction of the body in these cases, without corresponding combustion of surrounding combustible substances — large holes burned in the floor, partly consumed furniture, and so on, without destruction of the building; but this is not infrequently seen in accidental or set fires in buildings, when the supply of oxygen is small. I have seen a case, in which a woman fell in the night, with a lighted lamp, burning oil from which set fire to, and burned through the

[2] Medical Jurisprudence, pages 880 and 815.

straw matting and floor. The woman was found in the morning burned to death, as she fell, but the fire had gone out of its own accord. Nearly all of the cases reported have been women advanced in life, very fat, and accustomed to imbibe large quantities of alcohol in some form, and supposed to burn more readily on that account, but it has been found that tissues soaked in alcohol do not burn more readily than others.[3]

The well-known fact that the consumption of alcohol aids the deposition of fat in the human body [4] is the probable cause of the more frequent occurrence of combustion in these subjects.

Professor Ogston, in paper mentioned, relates a case in the experience of his father, in which so much alcohol existed in the blood that the serum in the ventricles of the brain caught fire and burned from a lighted match, and he has seen in a death from alcohol poisoning, the smell so marked in the ventricles of the brain, that it was possible to ascertain the nature of the beverage used.

He also mentions the experiments of Dr. Beveridge, Pathologist of the Royal Infirmary at Aberdeen, in relation to the combustion of human flesh. He found that when a section having no fat, like muscle, is placed next to the flame, the charring which results is slow, while with the cutaneous surface the cutis is speedily destroyed, and cracking permits liquefaction and flowing out of the subcutaneous fat, which taking fire, quickly reduces it to the condition of a black, greasy substance, resembling cinder. Soaking in alcohol makes no difference as to result, neither accelerating or retarding it. First the alcohol is burned, then the tissue, as if no alcohol had been present.

The number of recorded cases of so-called spontaneous combustion is too large, the reliability of the witnesses and reporters too great for us to deny that many bodies have been burned more or less completely after the simple ignition of some combustible substance in contact with the body; yet we know that ordinarily it is very difficult to burn the human body. This is seen in the length of time required to consume the bodies of persons burned at the stake, and in the partly consumed bodies of the victims of accidental fires.

In the celebrated Countess Goerlitz case, in which Stauff was tried for murder, experiments were made by Dr. Graff, for the purpose of ascertaining the amount of heat necessary to effect equal destruction of the body, as was observed in this case, the result of which was, that more than one hundred pounds of wood were required to produce even partial combustion of a human body.[5]

Of the forty-five cases of spontaneous combustion, cited by Dr. Frank, of Berlin, in an article published in 1843, it is only assumed that three took place without the immediate presence of fire, and Liebig shows that these cases are wholly unworthy of belief, and adds in relation to the claim of writers that excess of fat and the presence of alcohol in the body bring about an abnormal condition of easy combustibility, "that hundreds of fat, well-fed brandy-drinkers do not burn when by accident or design they come too near a fire."

From an analysis of all the cases on record up to 1851, Liebig arrives at the conclusion that the great majority agree in the following points:

"They took place in winter. The victims were brandy-drinkers in a state of intoxication. They happened where the rooms are heated by fires in open fireplaces and by pans of glowing charcoal, in England, France and Italy. In Germany and Russia, where rooms are heated by closed stoves, cases of death ascribed to spontaneous combustion are exceedingly rare. It is admitted that no one has ever been present during the combustion. None of the physicians who collected the cases or attempted to explain them, have ever observed the process, or ascertained what preceded the combustion. It is also unknown how much time had elapsed from the commencement of the combustion to the moment when the consumed body was found."[6]

The only reasonable and intelligent explanation of the cases of so-called spontaneous combustion is, that human bodies occasionally possess increased combustibility by reason of an unusual deposition of fat, and that age and spirit-drinking are factors only so far as they aid in fat accumulation. Combustibility exists not in the same degree however, even in fat people. This can be accounted for on the supposition that fat, especially when it exists in large amount, occasionally has lowered vitality — more fat globules and less tissue than normal, thus furnishing more fuel for combustion. We know that the gross appearance of some fat warrants this assumption.

We are told by butchers that in some animals — usually the old and very fat— the fat is harder and has a granular appearance, and in extracting the fat from such, much less residue remains.

In the spontaneous combustion of mineral and organic substances (except that resulting from the action of strong acids, which is immediate), the action is slow, the process before combustion being that of heating from simple oxidation or fermentation.

If we are to admit the possibility of human spontaneous combustion, we can only do so on the supposition that it is a slow process, one of increasing heat passing into combustion. There is no account of this intermediate state ever having been observed, nor has exhumation of the body showed the results of spontaneous combustion. The record of reported cases is that the body is found more or less consumed, having been seen alive only a short time before.

That inflammable gases may be generated from rapid or slow decomposition of the body is possible; but that spontaneous combustion is a mode of death, as was once believed, is not possible, and there can be no such thing as human spontaneous combustion taking place after death, while combustibility must be admitted.

International Congress of Dermatology. — In connection with the second congress to be held in Vienna, in September, there will be an exhibition of all objects relating to the skin, such as scientific works, drawings, photographs, anatomical preparations, microscopes, instruments, and pharmaceutical preparations. The Minister of Finance has agreed to allow all articles from foreign countries intended for this congress to come in free of duty.

[3] Liebig.
[4] Virchow, Huss.
[5] Stillé and Wharton, p. 887.
[6] Letters on Chemistry, ed. 1851, p. 282.